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ABSTRACT

As part of the desegregation plan in the City of Detroit, teachers in recently desegregated schools participated in an inservice program to provide for equal instructional opportunity in the involved classrooms. Teacher-student interaction data were collected in each teacher's classroom using the Brophy-Good System. These data were transformed to produce a rate of interaction per 10 minutes per 25 students. The results of this study indicated that: (1) Black students and males received a greater rate of the classroom interactions than did white students or females; (2) white teachers had a higher rate of interaction than Black teachers; (3) female teachers had a higher rate of instructional activity than male teachers; (4) both male and female teachers acted in very similar ways with male and female students; and (5) there exists the possibility of a "cross race" effect such that Black students of white teachers and white students of Black teachers receive more of the classroom interactions. (Author)

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VERBAL BEHAVIOR PATTERNS OF TEACHERS IN INTEGRATED CLASSROOMS[1]

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Abstract

Verbal Behavior Patterns of Teachers in Integrated Classrooms

As part of the desegregation plan in the City of Detroit, teachers in recently desegregated schools were involved in an in-service program to provide for equal instructional opportunity in each of the involved classrooms. As part of this program teacher-student interaction data were collected in each teacher's classroom using the Brophy-Good System. These data were transformed to produce a rate of interaction per 10 minutes per 25 students. The results of this study indicated that black students and males received a greater rate of the classroom interactions than did white students or females; that white teachers had a higher rate of interaction than black teachers; that female teachers had a higher rate of instructional activity than male teachers; that both male and female teachers acted in very similar ways with male and female students; and that there exists the possibility of a "cross race" effect between white teachers and their black students, and with black teachers and their white students receiving more of the classroom interactions.

Verbal Behavior Patterns of Teachers

in Integrated Classrooms

Teacher-student interactions in the classroom are at best uneven with some students receiving greater quantities of teacher contact than others (Good, 1970; Jackson & Lahaderne, 1967; Kranz, Weber & Fishell, Note 1; Mendoza, Good, & Brophy, Note 2). Several studies have also shown some students to receive quantitatively superior treatment from their teachers (Brophy & Good, 1970; deGroat & Thompson, 1949; Good & Brophy, 1972; Rist, 1970; Rowe, 1969; Silberman, 1969). Moreover, previous investigators have consistently been able to demonstrate the effects of differential teacher behavior toward students differing on characteristics such as achievement level (Heller & White, 1975), sex or socio-economic level (Good & Brophy, 1971). These kinds of studies acquire particular significance when extended to situations involving the variables of student and teacher race.

Though the Brown vs. Board of Education[1] school desegregation decision has had wide impact with regard to the integration of American schools for the purpose of providing for equal educational opportunity, it continues to remain an unanswered question as to whether or not black and white children receive the same quantity and quality of instruction even though they are in the same classrooms. Previous research on a number of other student characteristics as they effect instruction, clearly suggests that race may be an extremely important variable. Indeed, several studies have already examined the variables of teacher and student racial and ethnic variables as they influence the quantity

[1]Brown vs. Board of Education, 1954, 347 U.S.483

and quality of classroom interaction (e.g. Byalick & Bersoff, 1974; Gay, Note 3; Hillman & Davenport, 1978; Jackson & Cosca, 1974; Rubovits & Maehr, 1973; U.S. Civil Rights Commission, Note 4).

Rubovits and Maehr (1973) report what they call a "disturbing instance of white racism" in that black students in their sample were given less attention, were ignored more, praised less and criticized more than white students by the sample of white teachers. Their results indicated that white students received far more attention in general than did the black students. Using a sample of both white and black teachers, Byalick and Bersoff (1974) in their study of reinforcement practices in integrated classrooms, found that teachers reinforced opposite-raced children more frequently than they did children of their own race.

The U.S. Civil Rights Commission (Note 4) in a series of studies on the education of Mexican-American youth in the Southwest found disparities in teachers' behavior with Anglo-American and Chicano students in six of the categories on the Flanders System of Interaction Analysis and in each case the treatment was in the favor of the Anglo-American students. A study by Jackson & Cosca (1974) using a modified version of the same observation system, supports these results by finding significant disparities in favor of Anglo-American vs. Chicano students on each of the following three variables: teachers' use of praise, acceptance or use of Anglo-American ideas, and number of questions directed toward students. In both of these studies, Anglo and Mexican-American teachers were both found to provide more favorable treatment to Anglo-American students than to those who were Mexican-American.

Gay's (Note 3) research on teacher behavior with black and white students demonstrated that all teachers acted similarly in differentiating their verbal behaviors with black and white students, that black students did not participate as often as white students in class discussions, and that white students participated in more academic and substantive ways, and received more encouragement and praise from teachers, while black students participated more in procedural and behavioral or discipline interactions. According to Gay (1975) it makes little difference whether teachers are black or white, or teaching elementary or secondary classes, they expect the quality of white students' classroom participation to be better than black students'.

Aware of the research findings which indicated student ethnicity to be a major determinant of teachers' expectations and interactional behaviors, and the results of a local survey (Detroit Public Schools, Note 5) suggesting that teachers did not believe that they had different expectations for black and white students, and faced with a court-ordered desegregation plan to be implemented in February, 1976, the Detroit Public Schools undertook a large scale in-service program through which it hoped to insure the delivery of equal quality education to black and white students alike.

This In-Service Training Program for Detroit teachers in recently desegregated schools took place in four stages. During the first stage, 1500 teachers from 80 schools attended, on a voluntary basis, one of five weekend meetings. The purpose of these meetings was to deal with the effects of teacher expectations, beliefs and attitudes on pupil behavior. More specifically, these meetings focused upon teaching in a multi-racial,

multi-ethnic school system with presentations and exercises having knowledge and attitude as opposed to skill development objectives. The major purpose of these weekend workshops was to establish enough rapport between the teachers, the meeting leaders, and coder-observers so that the teachers would be willing to participate in what was expected to be the major part of the treatment and allow themselves to be observed while teaching a lesson in their class.

Following these weekends, trained observers entered the classrooms of the participating teachers and coded the interaction between these teachers and their students. The participating teachers represented all grade levels, kindergarten through 12th grade. The observation system, a modified version of the Brophy-Good Interaction Coding System (Brophy & Good, 1970), produced descriptive information on the nature of this teacher-student interaction with specific information concerning teacher questioning patterns, feedback methods, reinforcement and criticism patterns as well as indices of pupil behavior and misbehavior.

Following this initial observation these descriptive data were shared with each of the teachers as a way of describing to them the nature of their interaction with their students. Previous research by Good and Brophy (1974) has shown that this form of feedback can be very helpful in producing changes in teacher behavior where necessary.

Following this feedback coders then re-entered these classrooms in order to make another observation of teacher-student interaction in an attempt to determine to what extent feedback to the teacher had effected their interaction patterns. The data reported in this study include only those collected during the first set of classroom observations, and are

descriptive interaction patterns in a multi-racial urban setting, as well as a set of pre-observations or baseline to be compared at a later time with the second set of observations collected after the feedback intervention aspect of the in-service program.

Sample

Usable data were obtained from 306 classrooms recently effected by the Detroit court-ordered desegregation. This included the classrooms of 158 elementary teachers, 99 middle school teachers and 49 high school teachers. One hundred and sixty-one of these teachers were black and 145 of the teachers were white, while 67 were male and 239 were female. Table 1 presents a further breakdown of the teachers by sex, race, and grade level.

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Insert Table 1 About Here

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The sample of teachers was heterogeneous in terms of age, experience and subject matter taught. The average age of the teachers and years of teaching experience were 37.48 years (S.D.=11.15) and 12.04 years (S.D.=8.75) respectively. White teachers tended to be older ($\bar{X}$ age= 40.83) than black teachers ($\bar{X}$ age=34.97) and white teachers tended to have more years of teaching experience ($\bar{X}$=15.00 yrs.) than black teachers ($\bar{X}$=9.70 yrs.). While subject matter taught by teachers was not a major concern of this study, there was considerable variation in the academic subjects taught during the classroom observations.

Data Collection

All teachers who attended one of the several weekend meetings were approached by the trained coders who were part of the weekend meeting

staff to schedule an observational time for the following week. The nature of the classroom observations was explained to teachers as an opportunity to gain more knowledge about their classroom interaction patterns and instructional styles. Teachers were told that the data from individual observations could only be meaningfully interpreted relative to each teachers' lesson goal and that the data were most meaningful to teachers only when collected during an uncontrived teacher-student lesson exchange.

Coders went to teachers' classrooms according to the prearranged schedule and were generally introduced by teachers to the students as "someone wanting to observe the class" and were seated in an inobtrusive position to the side of the classroom. After briefly familiarizing themselves with the classroom procedures and with the subject of discussion, the coders would record the data, subject matter, time, teacher sex and race, student sex-race composition in the class and begin to code teacher-student verbal interactions.

Only classroom observations of ten minutes or longer were included in the data analysis, with the length of classroom observations ranging from 10 minutes to 43 minutes with a mean observation time of 21.79 minutes and a standard deviation of 6.65 minutes.

The observational instrument was a modified version of the Brophy-Good Dyadic Interaction Observation System (Brophy & Good, 1970). This system yields a variety of qualitative and quantitative measures of student teacher interactions, separately recorded for each student in the class. The coding procedure was modified for this study in order to distinguish among behaviors associated with individual students of various

ethnic groups. Only public classroom behaviors directed to or from individuals of the class were coded. Each time an interaction was coded the sex and race of the student participating in that interaction was also coded.

While the Brophy-Good Dyadic Interaction System is generally well-known, it should be pointed out that the system records three basic types of teacher-student interactions. Categories 1-13 refer to academic response opportunities. Of the academic response opportunities, the number of process questions and the number of product questions are categories of types of teacher questions. Process questions require students to verbally explain the problem-solving steps or strategies used in arriving at a conclusion, while product questions require a single word or short answer from students usually reporting facts from memory.

Categories 14-18 refer to teacher questions or statements dealing with routine classroom management and procedures, and categories 19-24 refer to student initiated interaction. Most of the teacher-student interactions variables are self-evident from their titles.

Reliability from the 14 coders was obtained by having each of the observers code a 15 minute videotape recording of a fifth grade math lesson. While this was not the most desirable method, it was the only one available for this particular study. Reliability was computed as the number of agreements divided by the number of agreements plus disagreements plus omissions multiplied by 100 for each pair of observers. The average reliability was 80%. The primary reason for the low reliability was the difficulty encountered by the observers in attempting to

code the sex of the student. This was particularly difficult because the videotape camera was situated in the back of the room and voice tone was often the only cue possible in obtaining the sex identification. Observers reported that they had no problems coding the race and sex variables in the classroom setting.

A portion of these data have been previously analyzed and reported elsewhere (Hillman & Davenport, 1978). In this previous report the raw data were transformed and modified to allow for the analysis of possible disproportionate instructional opportunities among teachers and students of different racial groups. Raw scores of each category of student sex and race were transformed into a standardized score based on that group's representation within a given observational category proportionate to its representation of students in the classroom. While this standardization formula was helpful in examining the extent to which certain sex and race characteristics of teachers and students interacted to produce proportionate or disproportionate instructional opportunities, the standardization procedure itself removed the factors of race of teacher and sex of teacher as main effects, from any possible data analysis or interpretation. Thus the results presented here represent the analysis of these data with regard to these two important variables as well as a further analysis and clarification of the data with regard to the other variables.

Data Preparation and Analysis

The raw frequency data from the Brophy-Good Dyadic Interaction Observation System were modified to produce a "rate" score which resulted

in a "number of interactions-per-pupil" variable. The formula used for this purpose was:

$$\text{Race} = \frac{\text{Total number of interactions for a given student sex-race category}}{\text{Number of students in the given student sex-race category}} \times \frac{10}{\text{Length of observation}} \times \frac{\text{Total number of students in classroom}}{25}$$

where rate then equalled the number of interactions per pupil in a given sex-race category, per ten minutes of observation, adjusted for a standard class size of 25 pupils per class.

Data were treated as missing only if no instances of a given interaction category occurred during an observation; thus zeros in one sex-race category were included in the data analysis provided students of that sex-race category were present, and provided at least one of the other sex-race categories in that classroom for that variable was involved in an interaction.

Results

A series of four-way analyses of variance were performed on the data in an attempt to examine the effects of teacher and student sex and race characteristics on the classroom interactions. Of the original 24 dependent variables, however, 5 had to be eliminated from the analyses because the frequency of occurrance of behaviors in these categories was too low for meaningful statistical analysis. The categories eliminated were: teacher ignores student behavior, teacher does not intervene in student behavior, teacher praises student behavior, teacher selected incorrect target for discipline, and teacher criticized a student initiated question. The first four of these variables were non-academic student-teacher interaction categories, while the fifth was a student-initiated behavior.

Table 2 shows the number of dependent variables (out of a total of 19) for which each effect reached statistical significance ($p < .05$). To illustrate the impact of the various main effects and interactions, the binomial probabilities for obtaining N/19 repeated significant tests is also shown in Table 2. (This binomial probability should be interpreted cautiously, however, since to a degree, the dependent variables were correlated with each other).

Judged by the binomial probability that n of 19 tests would reach the $p < .05$ level, all of the main effects and one of the two-way interaction effects (i.e., race of student by race of teacher) reached statistical significance. The main effects for sex of student and sex of teacher were particularly strong with results being significant on 10 of 19 variables in the case of student sex and 8 of 19 variables in the case of sex of teacher; both exceeding the $p < .0001$ level of significance. The variable of race of student was a significant factor in the case of 5 of 19 variables and teacher race significant in the case of 4 of 19 variables. The race of student by race of teacher interaction, the only interaction to result in statistical significance according to the binomial theorem, had 7 of 19 variables for which there was a significant difference. These were the only interaction effects to reach statistical significance.

An examination of the means involved in the main effect analyses revealed clear trends in each of the four cases. For four of the five significant race of student effects, black students had a higher rate of involvement than did white students. The only variable on which white students were more involved was in having teachers repeat questions to

them more often than for black students.

On all of the ten significant sex of student effects, male students had a higher rate of involvement than did their female counterparts. These ten dependent variables were equally divided between academic response opportunity variables and nonacademic and student initiated behavior variables.

The effect of race of teacher was significant for four dependent variables where in three of these four cases white teachers had a higher rate of involvement than did black teachers with the only exception being the situation where students of black teachers had a higher frequency of giving no response when a question was asked of them.

On the sex of teacher effect, seven of the eight significant effects showed female teachers to have a higher rate of involvement than did male teachers. The only exception to this was the variable of process questions on which the rate of occurrance was greater for male teachers than for female teachers.

To analyze the seven significant race of student by race of teacher effects, a series of Newman-Keuls tests (Winer, 1971) were performed on all of the possible contrasts for each of the significant dependent variables. The tests which were significant are presented in Table 3. Seven of the tests, involving four dependent variables, were significant. The four variables were product questions, student volunteers, student gives incorrect answer (two tests significant), and teacher gives answer (three tests significant). Each of these variables is an academic response opportunity variable, with no significant interaction effects being observed for non-academic and student-initiated behavior variables.

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Insert Table 3 About Here

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In three cases, black teachers of white students had the highest rate of involvement (product questions, incorrect answers, student volunteers). In one case (teacher gives answer), white teachers of black students had the highest rate of involvement and in that case the rate of interaction was significantly higher than each of the other three means. White teachers of black students also had the second highest frequency on the students give an incorrect answer variable.

In two cases, white teachers of white students had the lowest rate of involvement, while black teachers of black students had the lowest rate of involvement in two other cases. In one case (student gives incorrect answer), white teachers of white students had a significantly lower rate than either white teachers of black students or black teachers of white students.

Overall, the Newman-Keuls tests seem to suggest that teachers of an opposite race from a student have a higher rate of involvement than do teachers of the same race as the student.

Discussion

Main effect analyses showed that where a main effect was significant for race of student, that in four of the five cases black students had a higher rate of involvement than did their white counterparts. Thus black students appear to have a higher frequency of being called upon to respond as opposed to volunteering, had their behavior criticized more by teachers, asked a question or made a relevant response, and had teachers give them feedback on a student initiated question or response more often

than for white students. White students received a higher rate of having teachers repeat questions to them than black students. This finding is consistent with the previous analysis of the standardized data (Hillman & Davenport, 1978), but in conflict with the results presented by Gay (1974) and by Rubovits and Maehr (1973) which showed that white students received far more attention from teachers than black students. In the Rubovitz and Maehr (1973) study however, teachers were all white pre-service teachers whereas the teachers in this sample were all experienced teachers of which 53% were black. While this difference in the nature of the teacher sample appears to be of importance it is not clear whether this is because of the race of teacher or experience variable. Because few classroom studies are available which examine the variable of student race in terms of these interaction variables, additional studies will be required to understand these conflicting results.

The main effect analysis for the sex of student factor showed that in each and every case where significance was obtained males received a higher rate of the variable than females. This was the case for each of the following 10 dependent variables: product questions. student volunteers, student gave a correct answer, student gave an incorrect answer, teacher ended contact, teachers criticized behavior, student asked a question or gave a response which was relevant, student asked a question or gave a response which was irrelevant, teacher did not accept a student question or response, teacher gave feedback to a student question or response. These results are highly consistent with the standardized data analysis (Hillman & Davenport, 1978) as well as with

those obtained by Good, Sikes & Brophy (1973). Because of the pattern of variables on which significance was obtained it seems clear that male students both initiated more instructional and behavioral contact with teachers (e.g., student initiated behavior variables) and that teachers initiated more instructional contact (e.g., product questions) with males than with females. The high activity level of male students however is not always on variables thought to be positive in terms of instructional outcomes or for that matter are the variables consistent with themselves (e.g., student gives a correct answer--student gives an incorrect answer; student asks a question or gives a response which is relevant--student asks a question or gives a response which is irrelevant). Thus the high rate of male activity may be indicative of only a high quantitative as opposed to qualitative level of involvement in classroom events.

The race of teacher factor resulted in significant differences between white and black teachers on a total of four dependent variables. In three cases (process questions, teacher gives the answer and teacher praises a student initiated question or response) white teachers had a higher rate of frequency of the variable than did black teachers, and for one variable (students give no response) the reverse was the case with black teachers having a higher frequency than white teachers.

The main effect analysis of the sex of teacher variable clearly indicated that female teachers had a higher rate of activity on seven of the dependent variables (i.e., product questions, students volunteer, student gives correct answers, teachers praise answers, teachers give answers, teachers criticize behavior, teachers praise a student's

question or response) with male teachers having a higher frequency of occurrence on only one (i.e., process questions). Thus while white teachers and female teachers appear to have higher frequencies of certain classroom behaviors, because of the lack of any significant interaction term effects of teacher race by teacher sex it is not possible to discuss these effects in terms of white females as compared with other teacher sex-race combinations. Indeed these teacher characteristic effects appear to be limited to the main effects of teacher sex and teacher race, thus suggesting that there are no effects attributable to their combination.

A curious and somewhat contradictory finding in examining the main effects, however, is that when the sex and race variables are examined in terms of student behavior, blacks and males are by far the most involved in the classroom events. However when these same variables of sex and race are looked at in terms of teacher behavior, whites and females are by far the most active.

The lack of any significant 2-way interactions involving the teacher sex and student sex variables suggests clearly that while male and female students behave differently in the classroom, and that male and female teachers behave differently in the classroom, that male and female teachers treat male and female students similarly. Thus the same pattern of -eater activity by males occurs in the classrooms of both male and female teachers, and the same pattern which has been shown to occur repeatedly with female teachers (Good, Sikes & Brophy, 1973) also occurs with male teachers. The arguments of some educators calling for the sexual balancing of teaching staffs based upon the notion

of differential teacher behavior as a function of teacher and student sex variables (Grambs & Waetjen, 1966; McNeil, 1964; Peltier, 1968) derives no support from the present data.

Analysis of the race of teacher by race of student interaction showed that in each case the group with the highest mean was a "cross race" group of either black teachers-white students, or white teachers-black students and that the group with the lowest mean, with only one exception was a same-race group of either white teacher-white student or black teacher-black student. On all of the other dependent variables in this interaction term no significant differences were observed suggesting that on the whole the interaction patterns between black and white teachers and black and white students are far more similar than they are different. Similar findings have been reported by other researchers (e.g. Barnes, 1973; Mangold, 1974) wherein they report that only a very small number of significant differences were observed in the interaction of teacher and student races.

It is the case however, that the "cross race pattern" found in the significant Newman-Keuls tests were universally present, though not significant in all of the thirteen academic variables. This pattern should be more closely examined in future research in this area, as it is consistent with the findings of other research (Brown, Payne, Lankewich & Cornell, 1970; Byalick & Bersoff, 1974). One possible explanation for its occurrence in this study would be the possibility that white and black teachers overcompensated in their interactions with white and black students in an attempt to make their interaction patterns appear to be equal. Though the teachers did not know the details of the observation system or

the particulars of what the observers were looking at, surely they had the expectation that in recently desegregated schools, the instructional opportunities presented in the classroom should be proportionately distributed among black and white equally.

Because the number of significant effects were lower than chance as determined by the binomial theorem none of the means in the other significant interactions were subjected to post hoc comparisons. Thus when looking at the patterns of classroom interaction as a function of race of student-sex of teacher, race and sex of student, sex of student and race of teacher and race and sex of teacher, the interaction patterns appear to be indistinguishable.

The results of this study clearly indicated that black students and males received a greater rate of the classroom interactions than did white students or females; that white teachers had a higher rate of interaction than black teachers; that female teachers had a higher rate of instructional activity than male teachers; that both male and female teachers acted in very similar ways with male and female students; and that there exists the possibility of a "cross race" effect between white teachers and their black students and with black teachers and their white students receiving more of the classroom interactions.

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Table 1. Distribution of Teachers in Sample By Sex, Race And Grade Level

Grade Level	Black		Whites		Totals
	Males	Females	Males	Females	
Elementary (Kdg-5th)	3	84	11	60	158
Middle School (6th-8th)	12	40	22	25	99
High School (9th-12th)	4	18	15	12	49
Totals	19	142	48	97	306

Table 2. Summary of Significant Analysis of Variance for Rate Scores

	ACADEMIC RESPONSE OPPORTUNITY VARIABLES														NONACAD. & STUDENT INITIATED BEHAVIOR VARIABLES									
	PROCESS QUESTIONS	PRODUCT QUESTIONS	STUDENTS NOT VOLUNTEER	STUDENTS DID VOLUNTEER	STUDENT CORRECT ANSWERS	STUDENT INCORRECT ANSWERS	STUDENTS NO RESPONSE	TEACHERS PRAISE ANSWERS	TEACHERS CRITICIZE ANSWERS	TEACHERS REPEAT QUESTION	TEACHERS ASK NEW QUESTION	TEACHERS END CONTACT	TEACHERS GIVE ANSWER	TEACHERS CRITICIZE BEHAVIORS	STUDENT QUESTION OR RESPONSE RELEVANT	STUDENT QUESTION OR RESPONSE IRRELEVANT	TEACHERS PRAISE STUDENT QUESTION OR RESPONSE	TEACHER NONACCEPT STUDENT QUESTION OR RESPONSE	TEACHERS GIVE FEEDBACK TO STUDENT QUESTION OR RESPONSE	TOTAL OF SIGNIFICANT TESTS ON ACADEMIC OPPORTUNITIES	TOTAL OF SIGNIFICANT TESTS ON NONACADEMIC BEHAVIORS	TOTAL NUMBER OF SIGNIFICANT TESTS	BINOMIAL PROBABILITY FOR N/19 REPEATED TESTS
TAL EFFECTS																								
IN EFFECTS																								
RACE OF STUDENT(S)			*						**					*	**				*	2	3	5	P=.0020
SEX OF STUDENT(S)		**		*	**	**					*			**	**	**		**	**	5	5	10	P<.0001
RACE OF TEACHER (T)	*						*					**			**					3	1	4	P=.0132
SEX OF TEACHER(T)	*	**		*	**			**				**		*		*				6	2	8	P<.0001
O-WAY EFFECTS																								
RACE(S)×SEX(S)																				0	0	0	P=NS
RACE(S)×RACE(T)		**		**	*	**		**			*	**								7	0	7	P<.0001
RACE(S)×SEX(T)									**			*								2	0	2	P=NS
SEX(S)×RACE(T)																				0	0	0	P=NS
SEX(S)×SEX(T)																				0	0	0	P=NS
RACE(T)×SEX(T)														**					**	0	2	2	P=NS
REE-WAY EFFECTS																								
RACE(S)×SEX(S)×RACE(T)									**			*								2	0	2	P=NS
RACE(S)×SEX(S)×SEX(T)																				0	0	0	P=NS
RACE(S)×RACE(T)×SEX(T)																				0	0	0	P=NS
SEX(S)×RACE(T)×SEX(T)																				0	0	0	P=NS
UR-WAY EFFECTS																								

*P<.05
**P<.01
***P<.001

Table 3

Statistically Significant Comparisons
On the Newman-Keuls Tests
For Student-Race, Teacher-Race Interactions

DEPENDENT VARIABLE	GROUP WITH LOW MEAN	GROUP WITH HIGH MEAN	q	d.f.	sig.
PRODUCT QUESTIONS	WHITE TEACHERS WHITE STUDENTS	BLACK TEACHERS WHITE STUDENTS	4.281	4,1122	.05
STUDENT VOLUNTEER	BLACK TEACHERS BLACK STUDENTS	BLACK TEACHERS WHITE STUDENTS	3.978	4,1087	.05
STUDENT GIVES INCORRECT ANSWER	WHITE TEACHERS WHITE STUDENTS	WHITE TEACHERS BLACK STUDENTS	3.398	3,871	.05
STUDENT GIVES INCORRECT ANSWER	WHITE TEACHERS WHITE STUDENTS	BLACK TEACHERS WHITE STUDENTS	4.421	4,871	.01
TEACHERS GIVE ANSWER	BLACK TEACHERS BLACK STUDENTS	WHITE TEACHERS BLACK STUDENTS	4.747	4,312	.01
TEACHERS GIVE ANSWER	WHITE TEACHERS WHITE STUDENTS	WHITE TEACHERS BLACK STUDENTS	3.573	3,312	.05
TEACHERS GIVE ANSWER	BLACK TEACHERS WHITE STUDENTS	WHITE TEACHERS BLACK STUDENTS	3.446	2,312	.05